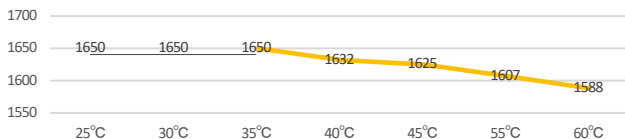


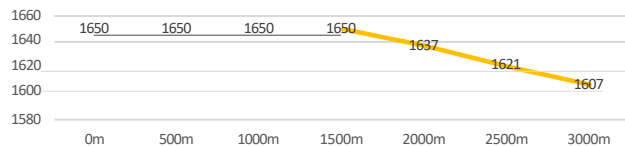


| MODEL           |             |     | PEMP1650S3 |
|-----------------|-------------|-----|------------|
| Power<br>Pf.0.8 | Standby     | kVA | 1650       |
|                 |             | kW  | 1320       |
|                 | Prime       | kVA | 1500       |
|                 |             | kW  | 1200       |
|                 | Frequency   | Hz  | 50         |
|                 | Voltage     | V   | 230/400    |
|                 | Rated speed | rpm | 1500       |

Temperature (CePEMius) Derate  
Curves Unit: kVA



Altitude (meters) Derate Curves  
Unit: kVA



**PEM generator sets meet the standards of ISO9001, CE, BS5000, ISO 8528, ISO 3046, IEC 60034, NEMA MG-1.22.**

#### Standard reference Conditions:

Standard reference condition 25°C (77°F ) air inlet temp, 100m (328ft) A.S.L 30% relative humidity. Fuel consumption data with diesel fuel with specific gravity of 0.85 and conforming to BS 2869: 1998, Class A2.

**RATINGS:** All three-phase units are rated at 0.8 power factor. **Standby ratings:** Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. Ratings are in accordance with ISO-3046/1, BS 5514, AS 2789, and DIN 6271. **Prime power ratings:** Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO-8528/1, overload power in accordance with ISO-3046/1, BS 5514, AS 2789, and DIN 6271. For limited running time and base load ratings, consult PEM. Obtain the technical information bulletin (TIS-101) on ratings guidelines for the complete ratings definitions. PEM reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever.

#### Standard Features

- PEM Power provides one-source responsibility for the generating system and accessories.
- The generator set and its components are prototype-tested, factory-built, and production-tested.
- The 50Hz generator set offers a AUS 2012 listing and CE 2015 listing.
- The generator set complies with ISO 8528-5, Class G3 requirements for transient performance.
- The generator set accepts rated load in one step.
- The 50Hz generator set engine is certified by the Environmental Protection Agency (EU or MEP) to conform to EU2, EU3 nonroad emissions regulations.(≤560KW)
- A one-year limited warranty covers all systems and components. Two-, five-, and ten-year extended warranties are aPEMo available.

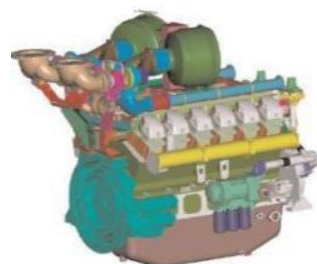
#### Generator Features

- The brushless, rotating-field generator has broadrange reconnectability.
- The pilot-excited, permanent-magnet generator (PMG) provides superior short-circuit capability
- Controllers are available for all applications. See controller features inside.
- The low coolant level shutdown prevents overheating (standard on radiator modePEM only)
- Integral vibration isolation eliminates the need for under-unit vibration spring isolators
- An electronic, isochronous governor delivers precise frequency regulation.
- Electronic engine controPEM and a generator microprocessor controller combine to deliver one of the most advanced control systems in today's generator market.

### Perkins engine Model: 4012-46TAG2A

#### Main features:

- Economic power
  - Individual four valve per cylinder heads give optimized gas flows, whiPEMt digitally governed unit fuel injectors ensure ultra fine fuel atomization and hence controlled rapid combustion, for efficiency and economy
  - Commonality of components with other engines in the 4000 Series family allows reduced parts stocking levePEM
- Reliable power
  - Developed and tested using the latest engineering techniques and finite element analysis for high reliability
  - Low oil usage and low wear rates
  - High compression ratio ensures clean rapid starting in all conditions
  - Support comes from a worldwide network of 4,000 distributors and dealers
- Compact, clean and efficient power
  - Exceptional power to weight ratio and compact size gives optimum power density for ease of installation and more cost effective transportation
  - Designed to provide excellent service access for ease of maintenance
- Cost effective power
  - Compact size and low noise
  - Lower fuel consumption and oil use
  - 500 hours service intervapeM
  - 2 year warranty



### Engine Specifications

|                              |                                             |
|------------------------------|---------------------------------------------|
| Engine Brand                 | PERKINS                                     |
| Engine Model                 | 4012-46TAG2A                                |
| Cylinder No. & Configuration | 12 cylinder Diesel.VEE type                 |
| Working Mode                 | Turbocharged and air-cooled                 |
|                              | charge air                                  |
| Bore x Stroke                | mm 160*190                                  |
| Displacement                 | L 45.842                                    |
| Compression Ratio            | 13:1                                        |
| Rated Power                  | kW 1331                                     |
| Rated Speed                  | 1500                                        |
| Lubrication System           | Splash Lubrication                          |
| Lube Oil                     | Conforms above CF class or SAE10W-30,15w-40 |
| Lube Oil Capacity            | L 177                                       |
| Battery Capacity             | 6-QW-200EP*4                                |
| Fuel Type                    | Diesel:0#(Summer),-10#(Winter),-35#(Cold)   |
| Fuel Consumption 25% load    | L/H 89                                      |
| Fuel Consumption 50% load    | L/H 178                                     |
| Fuel Consumption 75% load    | L/H 252                                     |
| Fuel Consumption 100% load   | L/H 342                                     |

## Alternator

|                                                                                   |                                            |
|-----------------------------------------------------------------------------------|--------------------------------------------|
| Type                                                                              | 4-Pole, Rotating-Field                     |
| Exciter type                                                                      | Brushless, Permanent-Magnet, Pilot Exciter |
| Voltage regulator                                                                 | Solid-State, Volts/Hz                      |
| Insulation                                                                        | NEMA MG1, Class H                          |
| Material                                                                          | Synthetic, Nonhygroscopic                  |
| Temperature rise                                                                  | 130°C, 150°C Standby                       |
| Bearing: quantity, type                                                           | 1, Sealed                                  |
| Coupling                                                                          | Flexible Disc                              |
| Amortisseur windings                                                              | Full                                       |
| Rotor balancing                                                                   | 125% 60 Hz, 150% 50 Hz                     |
| Voltage regulation, no-load to full-load(with < 0.5% drift due to temp. variation | 3-Phase Sensing, $\pm 0.25\%$              |
| One-step load acceptance                                                          | 100% of Rating                             |
| Unbalanced load capability                                                        | 100% of Rated Standby                      |

- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting.
- Sustained short-circuit current of up to 300% of the rated current for up to 10 seconds.
- Sustained short-circuit current enabling downstream circuit breakers to trip without collapsing the generator field.
- Self-ventilated and drip-proof construction.
- Superior voltage waveform from two-thirds pitch windings and skewed stator.
- Digital solid-state volts-per-hertz voltage regulator with  $\pm 0.25\%$  no-load to full-load regulation.
- Brushless alternator with brushless pilot exciter for excellent load response.

## Controller



Audiovisual annunciation with NFPA 110 Level 1 capability. Programmable microprocessor logic and digital display features. Safeguard circuit protection standard. 12- or 24-volt engine electrical system capability. Remote start, remote annunciation, and remote communication options. Refer to M6-46 for additional controller features and accessories

## Key Features

- 4-line back-lit LCD text display
- Five key menu navigation
- Front panel editing with PIN protection
- LED and LCD alarm indication
- Customisable status screens
- Power save mode
- Support for up to three remote display units
- 9 configurable inputs
- 8 configurable outputs
- Flexible sender inputs
- Configurable timers and alarms
- 3 configurable maintenance alarms
- Multiple date and time scheduler
- Configurable event log (250)
- Control logic facilities
- Easy access diagnostic page
- CAN and Magnetic Pick-up / Alt. Sensing
- Fuel usage monitor and low fuel alarms
- Charger alternator failure alarm
- Manual speed control
- Manual fuel pump control
- Engine exerciser
- "protections disabled" feature
- kW overload protection
- Power monitoring
- Load switching (load shedding and dummy load outputs)
- Automatic load transfer
- Unbalanced load protection
- Independent Earth Fault trip
- USB connectivity
- Backed up real time clock
- Configurable display languages
- User selectable RS232 and RS485 communications
- SMS Messaging (additional external modem required)
- Additional display screens to help with modem diagnostics
- Integral PLC editor

## Generating Sets Standard and Optional Features

### Engine

- 4-stroke, water-cooled diesel engine
- Standard air filter
- Standard fuel filter
- Standard oil filter
- Oil temperature sensor
- Low coolant level sensor
- Radiator with blowing fan
- Industrial silence
- Fuel water separator (optional)
- Water jacket heater (optional)

### Alternator

- Class H insulation
- IP23 Protection
- Automatic Voltage Regulator (AVR)
- PMG excitation
- Single bearing alternator
- Class F or class B temperature rise (optional)
- Digital Voltage Regulator (optional)
- Double bearing (optional)
- Condensed heater (optional)
- IP41 Protection (optional)

### Electrical system

- Maintenance-free and anti-explosion battery
- Standard breaker
- ABB breaker (optional)
- ATS (optional)
- Battery charger (optional)
- GMS monitoring (optional)

### Packing

- Engine manual
- Alternator manual
- Gensets operation and maintenance manual
- Tool kit

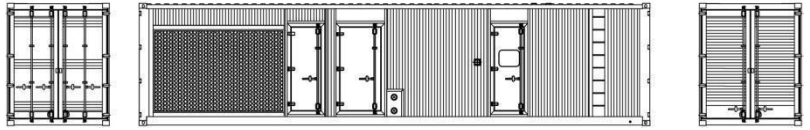
### Baseframe

- Forklift pockets
- Pulling slots
- Earth wire protection
- Built-in anti vibration mountings
- Fuel outlet value
- Standard fuel tank
- Enlarged fuel tank (optional)
- Separated fuel tank (optional)

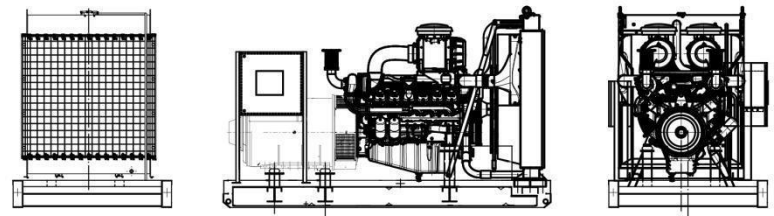
### Canopy

- Weatherproof & sound-attenuated canopy
- Sound-absorbing material
- Lifting lug
- Emergency stop button
- Inside silencer

### Overview Dimension & Weight



| P1650S3 (Containerized type) |                |               |                |             |                        |
|------------------------------|----------------|---------------|----------------|-------------|------------------------|
| Configuration                | L= Length (mm) | W= Width (mm) | H= Height (mm) | Weight (kg) | Fuel Tank Capacity (L) |
| Containerized Type           | ISO40'ft GP    |               |                | 18435       | 1000(optional)         |



| P1650E3 (Open type) |                |               |                |             |                        |
|---------------------|----------------|---------------|----------------|-------------|------------------------|
| Configuration       | L= Length (mm) | W= Width (mm) | H= Height (mm) | Weight (kg) | Fuel Tank Capacity (L) |
| Open Type           | 5000           | 2182          | 2436           | 10435       | 1000(optional)         |

Contact your distributor / dealer for more information

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